GEOGRAPHIC NEWS BULLETINS

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(The National Geographic Society is a scientific and educational Society, wholly altruistic, incorporated under the Federal law as a non-commercial institution for the increase of geographic knowledge and its popular diffusion. General Headquarters, Washington, D. C.)

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Photograph from Centenary Committee, M. E. Church

THEY GIVE JAPAN HIGH POPULATION PRESSURE

Not the least of Japan's modern problems is finding food, shelter, and work for the rapidly increasing islanders. This overcrowded country is being packed with little new citizens at the rate of more than 250 births every hour! To support them, Japan has a vast export trade, much of it to the United States (Bulletin No. 1).

HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic News Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers in the United States and its possessions for one year upon receipt of 25 cents in stamps or money order (in Canada, 50 cents). Entered as second-class matter, January 27, 1922, at the Post Office at Washington, D. C., under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized February 9, 1922.

UMI

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General Headquarters, Washington, D. C.

"Made in Japan" Label in Many American Shops

RAPID development of conditions in the Far East which may interfere with the free flow of world trade raises the question "Just what are the chief goods which Japan today exports to the world, and particularly to the United States?"

Walk into almost any store in almost any place in America, and you will find something with a "Made in Japan" label on it. Canned tuna fish at the grocery, bicycle tires at the hardware store, tennis balls at the sports shop, fountain pens at the stationer's, underwear at the department store, camphor at the druggist's, pearl earrings at the jewelry store, toys and rugs in the five-and-ten—these are only a few Japanese commodities that have scaled our high protective tariff walls and that still sell at a profit for Nippon.

The United States is far and away the most important country in Japan's foreign trade. We sell more to Japan than any other nation does, and we are also Japan's best customer. In the entire foreign trade of the United States, Japan ranks third, being exceeded only by the United Kingdom and Canada. In 1936 the United States imported $171,000,000 worth of goods from Japan, and sold her $204,000,000.

Japanese-Made Flags for the Fourth of July

The United States has been taking Japanese supplies all around the calendar: papier-mâché masks for Hallowe'en parties, electric bulbs for Christmas trees, straw and bamboo baskets for Easter eggs, and even American flags for Fourth of July celebrations.

Although many Japanese products compete with American goods, for some things the Empire of the Rising Sun is the only source. Natural camphor, agar-agar, oolong tea, Satsuma chinaware, and Japanese prints are not duplicated elsewhere. Aromatic white camphor is boiled out of the camphor laurel tree of Japan and its southern island Taiwan (Formosa), to be used in making celluloid, and in allaying the attacks of moths and pains (see illustration, inside cover). Agar-agar is another contribution to western medicine from Japan, a gelatinous product made from Asiatic seaweed.

The richness of Satsuma ware, its creamy surface covered with a network of tiny brown lines beneath a glass-smooth glaze and encrusted with designs of red and gold, a half-century ago stampeded western housewives into loud demands for Japanese tea sets, even bad imitations. Japanese prints first revealed that mass production of art need not be crude, for their satiny paper took vivid color from a succession of wood blocks as delicately as from a brush.

Of the skeins of raw silk shipped by speediest boats to the United States, for everything from furniture upholstery to Fifth Avenue fashions, about 94 per cent comes from Japan. Silk goods with Nipponese trademark are pongee and Fuji cloth, men's shirts, women's hose, handkerchiefs and mufflers for both, and garments which gave American women a style and word to rival the French négligée—the kimono (illustration, next page).

The islands of Nippon are again the United States' chief foreign source of lily bulbs, kelp for iodine, extracts for tanning leather, bamboo fishing rods and lawn rakes, flashlight bulbs, pyrethrum (chrysanthemum) flowers for insect-killing sprays and powder, and menthol crystals from Japanese peppermint plant to soothe American aches and pains.

Chief Japanese Export Tea Is Oolong

Although Japan is rarely thought of as a food-exporting nation, she puts a number of items on United States pantry shelves. Chestnuts, pineapples from Taiwan, canned mandarin oranges, dried mushrooms, onions, and vinegar are on the menu of imports from Japan. Frozen sturgeon and tuna fish, clams, and oysters are provided from bountiful Japanese waters. Canned crab meat of the giant king crab, not found in the United States, is shipped directly from floating Japanese canneries. Tuna and salmon, also canned in the waters where caught, are important in Japan's exports, most of the tuna to the United States and salmon to Great Britain.

The only Japanese tea which has held its own against the rising popularity of orange pekoe from Ceylon is oolong, a curled and blackened dry leaf which retains the fragrance of its original green freshness. Most of it comes from Taiwan (Formosa).

Japan sends the United States more pepper than does peppery Mexico. Many of Nippon's other vegetable exports are less familiar, such as cornmint, eucalyptus, and aconite. Some are valuable for their oil, like perilla oil and colza oil. Rapeseed, hempseed, kapok seed, and cottonseed oils also speed the wheels of industry. Onion seed, spinach seed, and radish seed go into the garden. Poppy seed gets to the table, as do turmeric for yellow coloring and almond oil for flavoring. Pine needle oil scents the bath. Castor oil goes to the medicine chest or to the oil can of the airplane mechanic.

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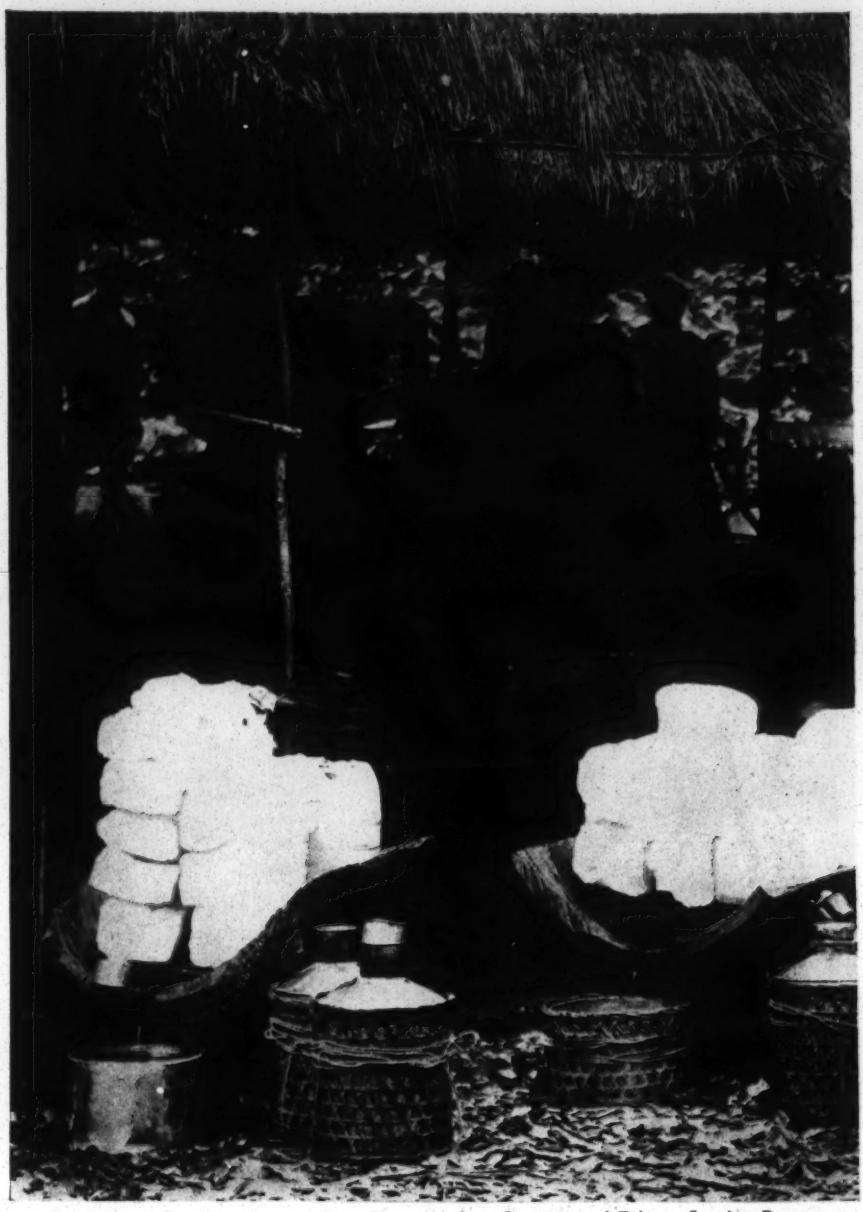

Photograph from Government of Taiwan, Camphor Department

THERE'S MANY A STEP BETWEEN TAIWAN CAMPHOR CAMPS AND THE CORNER DRUG STORE

The first step is to chip the bark from large camphor laurel trees. The second step is to boil chips in the wooden barrel-shaped vessels silhouetted beneath the shed. The resulting camphor, in dazzling white blocks, is being drained on wooden troughs in the foreground, and the camphor oil is collected in tin containers. Natural camphor reaches the United States only from Japan, chiefly from its southern island territory Taiwan, or Formosa (Bulletin No. 1).

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The Trumpeter Swan, a Vanishing American on the Increase

"DON'T be too quick on the trigger!" This is the plea again being broadcast by the Department of the Interior to gun clubs and duck shooters in the northern Rocky Mountain States.

The reason: hasty Nimrods may mistake the rare trumpeter swan for other waterfowl. Threatened with extinction in 1934, this great white bird has lately shown a tendency to multiply—thanks to a united protective front of sportsmen, press, and naturalists.

A recent Biological Survey census showed a total of 114 birds in their only known American breeding grounds—Yellowstone National Park, Wyoming, and the Red Rock Lakes Refuge, Montana (illustration, next page). A 1934 estimate listed only 50 trumpeter swans.

Chief Enemy Not Man, but Coyote

Contrary to popular belief, the chief enemy of the trumpeter swan is not man but the coyote. This underbrush sneak thief, which devours both eggs and young, threatened to send the trumpeter the way of the great auk and the passenger pigeon until man stepped in and offered bounties for coyote scalps.

But the battle has not yet been won, and the Government is making efforts to have people and cattle excluded from trumpeter swan breeding grounds during the nesting period. Islands are also being built in lakes that lack them in the area.

The trumpeter is only slightly larger than its close relative, the whistling swan. The main distinction is the voice. That of the trumpeter is very low in key—it might almost be called a groan at times—but possesses unusual resounding qualities. It has been compared to a French horn or the whistle on a streamline train. When a flock is passing overhead, the calls do not seem to be very loud, but long after, from miles away, the low groaning trumpet comes back, clear and insistent.

Average Length a Little over Five Feet

The ranges of the two similar species are almost reversed. Simply put, the whistler summers as far north as he can and winters far south. The trumpeter summers as far south as he can find safe breeding grounds, and winters as far north as he can find open fresh water.

The average length of the great white trumpeter swan is sixty-five inches. Old estimates of its great weight are probably not true. Thirty pounds is a fair maximum for a large bird. It has an all-black bill and black feet, although the young often have a lot of yellow on the feet. The Latin name of the trumpeter swan is *Cygnus buccinator*.

Note: For a color painting and additional information about wild swans and other American birds, see The Book of Birds, the first comprehensive work ever published with all major species of birds of the United States and Canada shown in full color. The two volumes contain 738 pages, 228 photographs; 950 birds in full colors; 633 bird biographies; 37 fascinating articles. A folder describing The Book of Birds and other Nature Books, maps, and picture publications of The Society can be obtained from the Washington, D. C., headquarters of the National Geographic Society.

For additional data about the Rocky Mountain breeding ground of the Trumpeter Swan see "With Wild Animals in the Rockies," *National Geographic Magazine*, August, 1935.

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The United States receives relatively little of Japan's main manufacture, cotton textiles. An annual output, sufficient to girdle the globe 58 times with a cotton band a yard wide, has made Japan the world's foremost cotton-spinning country. Since she is also the leading exporter and world headquarters for shipping raw silk and rayon, she has startled other textile countries by taking up the making of woolen cloth! Of her 106 customer countries, more than half have protective tariffs.

Other important Japanese manufactures reaching the United States are pottery, glass, and glassware. Yellow crockery mixing bowls and stoneware cookie jars may show their origin by hand-painted splashes of red and green blossoms as surely as by the Nipponese trademark. Tea sets decorated with English daisies, Prussian eagles, or the colors of Italian majolica come from Japan by the million dozen. Idzuma and Imauri ware, as well as the precious Satsuma, are rarer, but more finished in decoration; some of the small handleless cups have saucerlike covers, and no saucers beneath.

Glassware includes bottles, both beverage and thermos, and perfume vials. A majority of imported hypodermic syringes come from Japan, as well as tiny looking-glasses and cheap lenses.

Next in importance are the toys. Japan is one of Santa Claus's chief assistants. Leading the toy parade are dolls of china, rubber, jointed celluloid, rag, and bisque. Celluloid infants boxed with nursing bottle and bathtub, coffee-colored hula dancer with feather skirt and headdress, blond cowboy with imitation leather chaps—the majority do not betray their origin. Yet there are also frail bisque Orientals in bright rayon kimonos, with slanted eyes and square-cut bob of black hair. Mechanical toys include tin seals that balance balls, fire trucks that run, walking penguins, and airplanes that taxi along, labeled "U. S. Navy."

Knitted goods, imitation panama hats, toothpicks, cheap toothbrushes made of Chinese bristles, parasols and lanterns of bamboo and bright thin paper are other exports. Rag rugs are also shipped in, some copying New England hooked rug patterns. Pencils and erasers, artificial flowers, bamboo screens, painted silk purses and fans, incense, and ink make the Pacific crossing, too. Rubber, which Japan buys from tropical Asia, reaches the United States in the shape of hot water bottles, babies' pacifiers, and rubber-soled canvas-topped shoes.

Note: Additional photographs and references to the Japanese Empire will be found in "Friendly Journeys in Japan" and "Mysterious Micronesia," *National Geographic Magazine*, April, 1936; "Chosen—Land of Morning Calm," October, 1933; "Japan, Child of the World's Old Age" and "Motor Trails in Japan," March, 1933; "Tokyo To-day," February, 1932; "Some Impressions of 150,000 Miles of Travel," May, 1930; "Empire of the Risen Sun," October, 1923; "Some Aspects of Rural Japan," September, 1922, and "Formosa the Beautiful," March, 1920.

Bulletin No. 1, October 25, 1937.

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END OF COCOONS IS BEGINNING OF KIMONOS

Hot water softens cocoons so that Japanese working girls can unwrap the thread which the busy silkworm has spun around itself. Wound into skeins, the silk is exported as Japan's most plentiful raw material, to be milled in Europe or America. When the United States, after 1929, reduced its purchases of raw silk, Japan began to export rayon also. Now the greatest silk-exporting country is also the greatest shipper of rayon and of cotton textiles.

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Democracy Returns to Estonia

FASCIST government in Estonia is about to pass into history. After three years of virtual dictatorship, voters in the little Baltic nation declared themselves in favor of a return to constitutional government, which will go into effect January 1, 1938.

Estonia is the smallest and farthest north of a trio of youthful Baltic States carved from Imperial Russia following the World War. Yet, with its numerous large and small islands, it is equal to the combined areas of Massachusetts, Rhode Island, Connecticut, and half of New Hampshire.

Not much was heard about the Estonians or their homeland until 1919. Then the Germans, who had occupied it in 1918 during the World War, stepped out. At once the region was overrun with Russian refugees. But they, and not the Estonians, were dislodged. Soon afterwards the blue, black and white Estonian flag was hoisted atop the new Republic's government buildings. Reval, now called Tallinn, was made capital.

Mightier Nations Held Down Its People

There was good reason why little was known of the region. The Estonians are a strong, resourceful people, but they were forced, for seven centuries, to bow to mightier neighbors. The Danes roving about the Baltic in 1219 took over the northern part of the country. They held it until 1345 and sold their claim to German landholders (the so-called Baltic Barons) who had held southern Estonia for nearly a century and a half.

In the middle of the 16th century, land-hungry Swedes sailed across the Baltic and took the north country, while Poles moved in and held the south. The Swedes, however, allowed the Poles to remain only until about the time the Pilgrims landed in Massachusetts. But, in 1720, the Swedish grip was broken in turn by the Russians, who dominated the land until 1917.

Although Estonia's area is almost as large as that of the New England States, the country has only half again as many inhabitants as Boston. Most of them occupy farms and small villages. The visitor comes upon textile, lumber, and paper mills, oil refineries, and cement and cellulose factories in the more thickly populated districts, but in the main Estonia is an agricultural country.

"Potato State" of the Baltic

About two-thirds of the land is in farms, one-half of which is meadow and pastureland, supporting a large dairy industry. About one-fifth of the country is in forests, which feed the paper, pulp and lumber mills (illustration, next page). Rye is the leading farm crop, particularly in the fertile south where good crops of barley and flax also flourish. In the less fertile north country, potato growers have been so successful that Estonia has been dubbed the "Potato State" of the Baltic.

Tallinn, the largest port and city, also is the capital of Estonia. With 133,000 inhabitants it is one of only four cities with more than 20,000. As Reval, Tallinn was one of the chief ports of northern Imperial Russia. Over its docks today goes most of Estonian foreign trade. Textiles, coal, iron and steel lead the Estonian imports. Cotton and woolen fabrics, timber, paper, flax, potatoes, and dairy products are the chief exports.

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Photograph by Arthur A. Allen

ON LOWER RED ROCK LAKE, MONTANA, THE "SWAN SONG" OF THE TRUMPETER WAS RECORDED

That these large wild swans will sing, even when on the water, was proved by the Brand-Cornell University-American Museum of Natural History Expedition. By cornering the cygnets (young swans) back of a wire screen (right) the older swans were lured close to a blind hiding a microphone and camera. Thus, not only the trumpets of the big birds were recorded, but the lisping calls of the young as well.

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Wings over Bermuda

AIR service to Bermuda, started last summer between Port Washington, New York, and Hamilton, Bermuda, is to have a new station at the American end of the line. Because Port Washington does not have facilities for winter air operations, the terminus is being removed to Baltimore after November 1.

Baltimore is 830 miles air line distance from Hamilton, but the same five-hour schedule will be maintained by Pan American clipper ships and flying boats of the British Imperial Airways as that now in effect on the 770-mile run from Port Washington.

Success of the air route to Bermuda marks another milestone in the history of this popular mid-ocean health, pleasure and yachting resort, which may also become a "stepping stone" on the southern transatlantic air route to Europe.

Once Scene of Many Shipwrecks

Although Bermuda is such a tiny pinprick on the map of the Atlantic Ocean that radio directional beams are needed to guide modern flying boats to its shores, in earlier days it was a thorn in the side of mariners. Since its discoverer, Juan de Bermudez, piled his ship up on its treacherous coral reefs (illustration, next page) in 1515, Bermuda has been the scene of countless shipwrecks, extending down to last year when the Spanish liner *Cristobal Colon* ran aground and was lost off North Rock.

Channels dredged through reefs, powerful lighthouses and other navigational aids, however, have made it safe for even the largest ships, and today thousands of tourists from the United States, Canada and England visit the little mid-ocean island group annually.

Visitors returning to Bermuda after an absence of several years will notice a number of changes in the colony. Although automobiles are still forbidden on its public roads, Bermuda now has a 22-mile railroad which links the capital, Hamilton, with both Somerset and St. George's.

Industries are generally barred in the islands, yet Bermuda has some of the largest and finest resort hotels in the world, numerous shops and stores, and a perfume factory. Of increasing importance is its export trade of Easter lilies and early vegetables.

Air Base on Darrell Island

Perhaps the most noticeable recent change is the new air base on Darrell Island, in the Sound near Hamilton, the capital. One end of this rocky, cedar-covered bit of land has been cleared. Two concrete slipways run up from the blue waters of the Sound to an open space before a huge steel and glass hangar. One of the slipways is from the north and the other from the south, so that sheltered water is always available for beaching aircraft and towing them into the hangar for repairs or storage. Houses, of the usual Bermuda "cake frosting" white coral, have been built for the air base staff.

At the other end of the colony, in St. George's, the returning traveler may notice large liners anchored within the almost land-locked harbor of the ancient capital of Bermuda. They have entered through the Town Cut, a newly dredged channel, like a small Panama Canal, between the main island of St. George's and Paget Island.

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Until two decades ago, Estonia was a good customer of coal-producing countries. But the World War shut off her supply and she looked to her own land for fuel. Her timber filled the gap well, but expensively, until once neglected peat bogs in the northwestern part of the country were exploited and put to use. Up to that time peat had been used only locally, but today there are several hundred peat-cutting plants, and the fuel is widely used. In recent years the products from oil shale, discovered in the north country, also have kept down coal importations.

Tartu, Estonia, is the oldest settlement in the Baltic States. It is said to have been founded more than 900 years ago. A delightful town, it has been called the Oxford of the Baltic because it is the Estonian seat of learning. The University has more than 3,000 students, about one-fourth of whom are women.

Bulletin No. 3, October 25, 1937.

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Photograph by Klio

TIMBER IS A "MONEY CROP" IN ALL OF THE BALTIC STATES

This scene, in neighboring Latvia, is typical of the lumbering industry in Estonia as well. Women and men lend a hand in the work, in this instance the trimming of short logs into railroad ties. About one-fifth of Estonia is forest-clad.

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Drowned Canyons Are Explorers' New Happy Hunting Ground

SUBMARINE valleys extending over a hundred miles out beneath the surface of the North Atlantic have revealed their age. Rock specimens chipped from their steep underwater slopes may have been formed in the Pliocene epoch, possibly two million years ago. This estimate was made by scientists at the Oceanographic Institution of Woods Hole, Massachusetts.

"Go deep, young man," is today's substitute for "Go West." Here on the Continental Shelf of the east coast of North America, from Cape Hatteras north to Nova Scotia, the Atlantic hides drowned scenery of unknown mountains, gorges, deep gulfs, and tide-swept plateaus. This is the largest unexplored area near the United States. In size it is about equal to the settled part of the original Thirteen States, and it is larger than the Great Lakes (map, next page). Such ocean-bottom exploration was urged by Commodore Maury in the past century.

Invisible Niagara Falls in Submerged Grand Canyon

The United States Pacific coast Continental Shelf, although narrower, also is gouged out by deep underwater gorges. In western latitudes corresponding to the New York-Nova Scotia stretch—where the east coast has some of its most remarkable mile-deep submerged valleys—there are none at all.

If the Atlantic could be rolled back to reveal the Hudson River's valley extended a hundred miles out into the ocean, its drop and V-shaped trough would surpass a Niagara Falls at the head of a Grand Canyon of the Colorado.

Such hidden scenic wonders are now spotlighting the North Atlantic Continental Shelf, one of the vital features of United States geography and history. Here the Atlantic has mysteriously invaded the coastal plain and has penetrated so far that in Maine its tides climb one-time Appalachian foot hills, converting them into islands, valleys into bays. Deprived of coastal farming acres which made southern States agricultural, New England took to the water and became world-famous for shipbuilding. Wooded mountainsides bore timber at the water's edge, and drowned valleys made excellent harbors.

Seafood Stored on Continental Shelf

The Continental Shelf is also New England's pantry shelf. It reaches out for miles before the ocean becomes deeper than a hundred fathoms, and in these shallow waters the sunlight can penetrate to nourish marine plants as fish food. Most of the important commercial fisheries of the east coast thrive north of Cape Hatteras. South of this cape the Shelf becomes too narrow to hold much food.

The fertile sea along New England shores once attracted the baleen whale, in pursuit of which New England whalers were finally lured to the ends of the earth.

Smaller fry keep fishermen busy today. The cod has given its name to a cape. Mackerel, haddock, and shad make New England nets heavy, and the shellfish industry is busy with clams and oysters, lobsters and crabs. Off Cape Cod and Cape Sable are broad submerged plateaus, Georges Bank and Browns Bank, which, like the Grand Banks off Newfoundland, are rich fishing grounds.

Note: Descriptions and photographs of the Nova Scotia-Cape Hatteras sector of the Atlantic Coast may be found in the following: "Sea Creatures of Our Atlantic Shores," *National Geographic Magazine*, August, 1936; "A Bit of Elizabethan England in America" (Cape Hatteras), December, 1933; "Standing Iceberg Guard in the North Atlantic," July, 1926; "Collarin' Cape Cod," October, 1925; "Fishes of Our North Atlantic Seaboard," December, 1923; and "Battle-Ground of Nature: The Atlantic Seaboard," June, 1918.

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Across St. George's harbor an imposing new steel and concrete bridge now links St. David's, the isle of arrowroot, with St. George's. Just around the corner from this span is the new Biological Station, and also the Bermuda home of the noted scientist, Dr. William Beebe, who conducted many of his deep-sea researches in the Bathysphere off the southern coast of Bermuda.

Part of a Proposed Transatlantic Route

Bermuda will become an even more important air base when the southern transatlantic air line is put into operation. The next lap eastward on this route is a 2,240-mile jump to Ponta Delgada, in the Azores, followed by a 900-mile hop to Lisbon, Portugal, and a 980-mile final link to London. No plans for the operation of the route beyond Bermuda have been announced, perhaps because no suitable wireless base has yet been established in the Azores. German planes, catapulted from a mother ship, have made test flights over this route.

Meanwhile plans are going forward for a north Atlantic line, following a projected route via the Irish Free State, Newfoundland, New Brunswick, and Montreal or New York. This latter route is shorter than the Bermuda-Azores-Portugal line, but has fewer days of favorable flying weather.

Note: Additional data and photographs of Bermuda will be found in "The Islands of Bermuda," *National Geographic Magazine*, January, 1922. See also "Half Mile Down," December, 1934.

An inset map of the Bermuda Islands appears on The Society's Map of the Caribbean. Copies of this map may be obtained from the Washington, D. C., headquarters of The Society at 50c each, paper edition, and 75c each, linen edition.

Bermuda appears also on the map of the Atlantic coast of the United States following Bulletin No. 5.

Bulletin No. 4, October 25, 1937.

Photograph from S. S. Spurling

"BOILERS" GIVE A HINT OF HOW BERMUDA'S REEFS WERE FORMED

Off the southern coast of Bermuda many of these small black rims project from the green-blue water at low tide. They are made up of living crusts of barnacles, mussels, and serpulae. They get the name "boiler" from the noise and foaming of water after heavy seas dash over the rim and fall like cataracts from the sides when the wave recedes. In the distance can be seen the thin line of the outer, or barrier, coral reef which encircles the entire group of islands.

Drawn by Charles E. Riddiford

THE ATLANTIC COASTAL PLAIN BEGINS TO GO UNDERWATER NORTH OF CAPE HATTERAS

The 100-fathom line marks where the Oceanic or Continental Shelf slopes sharply down to 1,000-fathom depths, where lightless waters under great pressure support little life. Between the 100-fathom line and shore, however, fishing is an important industry, especially in the broad undersea plateaus of New England. The Coastal Plain can be thought of as a strip 400 miles wide from Appalachian Mountains to 100-fathom line (see arrow, left center), more or less under water. The submerged part, with its mysterious canyons, is now being explored by the echo-sounding process. Scientists can tell the distance to ocean bottom by timing a sound which is made on a ship and echoed back from the floor of the Atlantic.